

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
15 July 2004 (15.07.2004)

PCT

(10) International Publication Number  
**WO 2004/058723 A1**

(51) International Patent Classification<sup>7</sup>: **C07D 231/14**,  
231/16, 207/34, 277/56, 263/34, 333/38, 307/68, 309/28,  
327/06, 213/82, 239/28, 239/30, 237/24, C07C 233/03,  
211/45

(74) Agents: **OSBORN, Martin, Keith** et al.; Syngenta Limited, Intellectual Property Department, Jealott's Hill Research Centre, P.O. Box 3538, Bracknell, Berkshire RG42 6YA (GB).

(21) International Application Number:  
PCT/EP2003/014248

(22) International Filing Date:  
15 December 2003 (15.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
0230155.4 24 December 2002 (24.12.2002) GB

(71) Applicant (for all designated States except US): **SYNGENTA PARTICIPATIONS AG** [CH/CH]; Intellectual Property Department, Schwarzwaldallee 215, CH-4058 Basel (CH).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **EHRENFREUND, Josef** [AT/CH]; Schwarzwaldallee 215, CH-4058 Basel (CH). **LAMBERTH, Clemens** [DE/CH]; Schwarzwaldallee 215, CH-4058 Basel (CH). **TOBLER, Hans** [CH/CH]; Schwarzwaldallee 215, CH-4058 Basel (CH). **WALTER, Harald** [DE/CH]; Schwarzwaldallee 215, CH-4058 Basel (CH).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

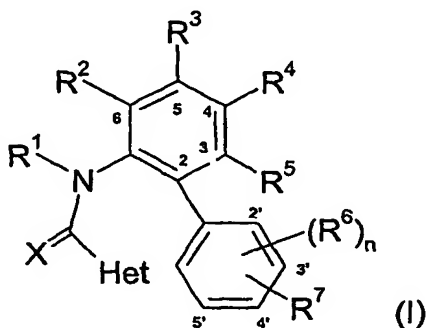
(84) Designated States (*regional*): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **BIPHENYL DERIVATIVES AND THEIR USE AS FUNGICIDES**



(I)

(57) Abstract: A fungicidally active compound of formula (I): where Het is a substituted 5- or 6-membered heterocyclic ring; R<sup>1</sup> is hydrogen, formyl, CO-C<sub>1-4</sub> alkyl, COO-C<sub>1-4</sub> alkyl, C<sub>1-4</sub> alkoxy(C<sub>1-4</sub>)alkylene, CO-C<sub>1-4</sub> alkyleneoxy(C<sub>1-4</sub>)alkyl, propargyl or allenyl; R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> are each, independently, hydrogen, halogen, methyl or CF<sub>3</sub>; each R<sup>6</sup> is, independently, halogen, methyl or CF<sub>3</sub>; R<sup>7</sup> is (Z)<sub>m</sub>C=C(Y<sup>1</sup>), (Z)<sub>m</sub>C(Y<sup>1</sup>)=C(Y<sup>2</sup>)(Y<sup>3</sup>) or tri(C<sub>1-4</sub>)alkylsilyl; X is O or S; Y<sup>1</sup>, Y<sup>2</sup> and Y<sup>3</sup> are each, independently, hydrogen, halogen, C<sub>1-6</sub> alkyl [optionally substituted by one or more substituents each independently selected from halogen, hydroxy, C<sub>1-4</sub> alkoxy, C<sub>1-4</sub> haloalkoxy, C<sub>1-4</sub> alkylthio, C<sub>1-4</sub> haloalkylthio, C<sub>1-4</sub> alkylamino, di(C<sub>1-4</sub>)alkylamino, C<sub>1-4</sub> alkoxycarbonyl, C<sub>1-4</sub> alkylcarbonyloxy and tri(C<sub>1-4</sub>)alkylsilyl], C<sub>2-4</sub> alkenyl [optionally substituted by one or more substituents each independently selected from halogen], C<sub>2-4</sub> alkynyl [optionally substituted by one or more substituents each independently selected from halogen], C<sub>3-7</sub> cycloalkyl [optionally substituted by one

or more substituents each independently selected from halogen, C<sub>1-4</sub> alkyl and C<sub>1-4</sub> haloalkyl] or tri(C<sub>1-4</sub>)alkylsilyl; Z is C<sub>1-4</sub> alkylene [optionally substituted by one or more substituents each independently selected from hydroxy, cyano, C<sub>1-4</sub> alkoxy, halogen, C<sub>1-4</sub> haloalkyl, C<sub>1-4</sub> haloalkoxy, C<sub>1-4</sub> alkylthio, COOH and COO-C<sub>1-4</sub> alkyl]; m is 0 or 1; and n is 0, 1 or 2; the invention also relates to novel intermediates used in the preparation of these compounds, to agrochemical compositions which comprise at least one of the novel compounds as active ingredient and to the use of the active ingredients or compositions in agriculture or horticulture for controlling or preventing infestation of plants by phytopathogenic microorganisms, preferably fungi.